

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62384AP, TD62384F, TD62384AF
TD62385AP, TD62385F, TD62385AF

8CH LOW INPUT ACTIVE DARLINGTON SINK DRIVER

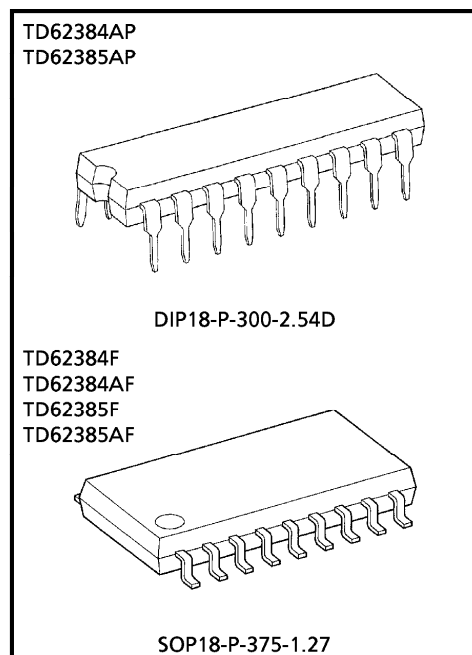
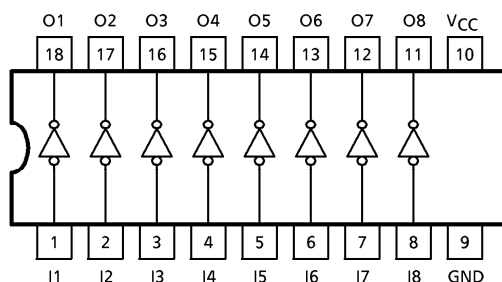
The TD62384AP/F/AF and TD62385AP/F/AF are non-inverting transistor arrays, which are comprised of eight NPN darlington output stages and PNP input stages. These devices are Low Level input active drivers and are suitable for operations with TTL, 5V CMOS and 5V Microprocessor which have sink current output drivers. Applications include relay, hammer, lamp and LED driver.

FEATURES

- Output current (single output) 500mA (Max.)
- High sustaining voltage 35V (TD62384F, 385F)
50V (TD62384AP/AF, 385AP/AF) (Min.)
- Low level active input
- Standard supply voltage
- Inputs compatible with TTL and 5V CMOS
- Package type-AP : DIP-18pin
- Package type-F, AF : SOP-18pin

TYPE	V _{IN} (ON)
TD62384AP / F / AF	- 20V~V _{CC} - 2.8V
TD62385AP / F / AF	0V~V _{CC} - 3.7V

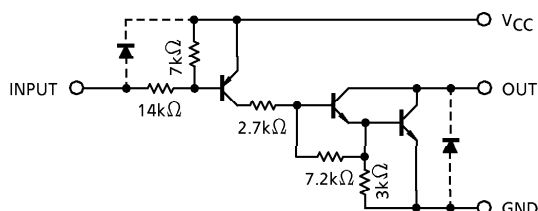
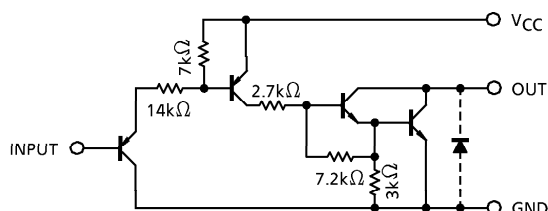
PIN CONNECTION (TOP VIEW)



Weight
DIP18-P-300-2.54D : 1.47g (Typ.)
SOP18-P-375-1.27 : 0.41g (Typ.)

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SCHEMATICS (EACH DRIVER)
TD62384AP / F / AF

TD62385AP / F / AF


(*) The input and output parasitic diodes cannot be used as clamp diodes.

MAXIMUM RATING (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	- 0.5~7.0	V
Output Sustaining Voltage	AP / AF	$V_{CE(SUS)}$	- 0.5~50	V
	F		- 0.5~35	
Output Current		I_{OUT}	500	mA / ch
Input Voltage	V_{IN} (Note 1)		- 22~ $V_{CC} + 0.5$	V
	V_{IN} (Note 2)		- 0.5~7	
Input Current		I_{IN}	- 10	mA
Power Dissipation	AP	P_D (Note 3)	1.47	W
	F / AF		0.96	
Operating Temperature		T_{opr}	- 40~85	°C
Storage Temperature		T_{stg}	- 55~150	°C

(Note 1) TD62384AP / AF / F

(Note 2) TD62385AP / AF / F

(Note 3) Delated above 25°C in the proportion of 11.7mW/°C (AP-Type), 7.7mW/°C (F, AF-Type).

RECOMMENDED OPERATING CONDITIONS (Ta = - 40~85°C)

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage		V _{CC}	—	4.5	5.0	5.5	V
Output Sustaining Voltage	AP / AF	V _{CE (SUS)}	—	0	—	50	V
	F		—	0	—	35	
Output Current	AP	I _{OUT}	T _{pw} = 25ms, Duty = 50%, 8 Circuits	0	—	115	mA / ch
	F / AF		T _a = 85°C, T _j = 120°C	0	—	78	
				T _{pw} = 25ms, Duty = 10%, 1 Circuit	0	—	
Input Voltage	TD62384	V _{IN}	—	− 20	—	V _{CC}	V
	TD62385			0	—	5.5	
Power Dissipation	AP	P _D	—	—	—	0.52	W
	F / AF		—	—	—	0.35	

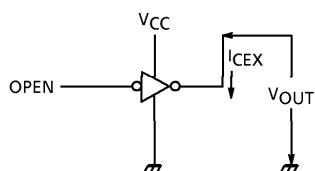
ELECTRICAL CHARACTERISTIC (Ta = 25°C)

CHARACTERISTIC			SYMBOL	TEST CIR- CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Leakage Current		AP / AF	I _{CEX}	1	V _{CC} = 5.5V, I _{IN} = 0, Ta = 85°C	V _{OUT} = 50V	—	—	100	μA
		F			V _{OUT} = 35V					
Output Saturation Voltage			V _{CE} (sat)	2	V _{CC} = 4.5V, I _{OUT} = 350mA V _{IN} = V _{IN} (ON) MAX.		—	1.4	2.0	V
Input Current		(Output On)	I _{IN} (ON)	3	V _{CC} = 5.5V, V _{IN} = 0.4V		—	−0.32	−0.45	mA
					V _{CC} = 5.5V, V _{IN} = −20V		—	—	−2.6	
		(Output Off)	I _{IN} (OFF)	4	—		—	—	−4.0	μA
Input Voltage	(Output On)	TD62384	V _{IN} (ON)	5	—		—	—	V _{CC} − 2.8	V
		TD62385			—		—	—	V _{CC} − 3.7	
Supply Current			I _{CC} (ON)	6	V _{CC} = 5.5V, V _{IN} = 0		—	17	22	mA
			I _{CC} (OFF)		V _{CC} = 5.5V, V _{IN} = V _{CC}		—	—	100	
Turn-On Delay			t _{ON}	7	V _{CC} = 5V, V _{OUT} = 50V		—	0.1	—	μs
Turn-Off Delay			t _{OFF}		R _L = 163Ω, C _L = 15pF (Note 1)		—	3	—	

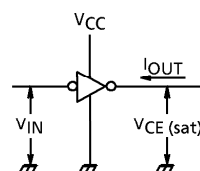
(Note 1) F-Type : V_{OUT} = 35V, R_L = 116Ω

TEST CIRCUIT

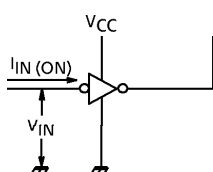
1. I_{CEX}



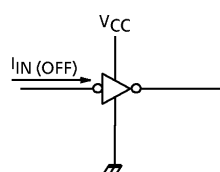
2. $V_{CE(sat)}$



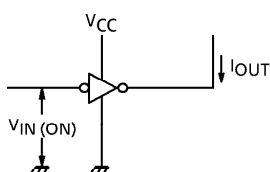
3. $I_{IN(ON)}$



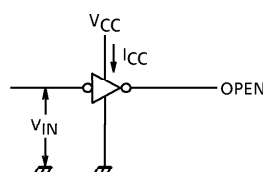
4. $I_{IN(OFF)}$



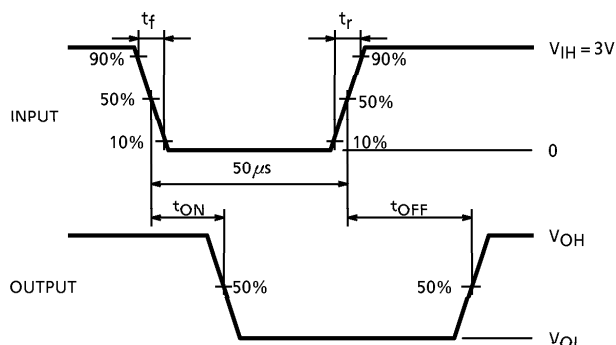
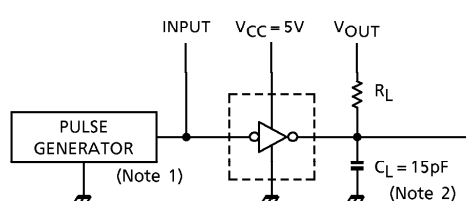
5. $V_{IN(ON)}$



6. I_{CC}



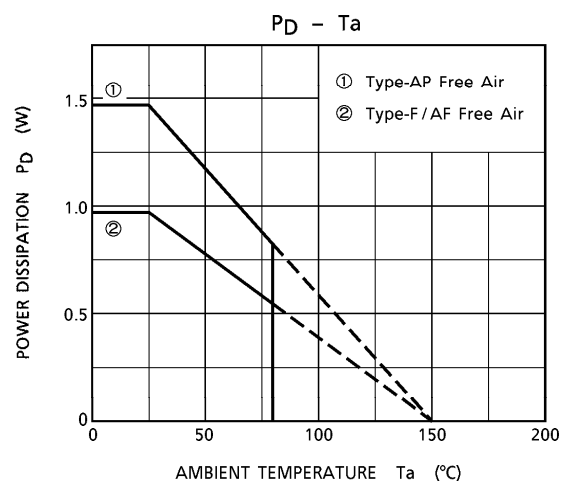
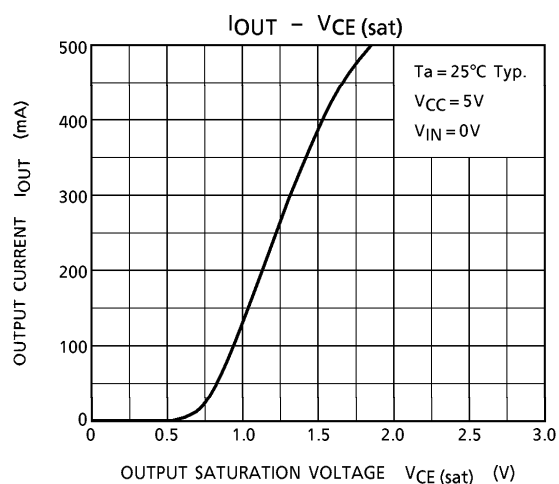
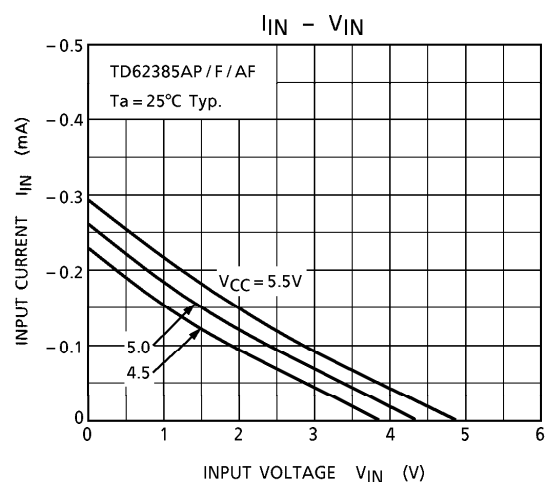
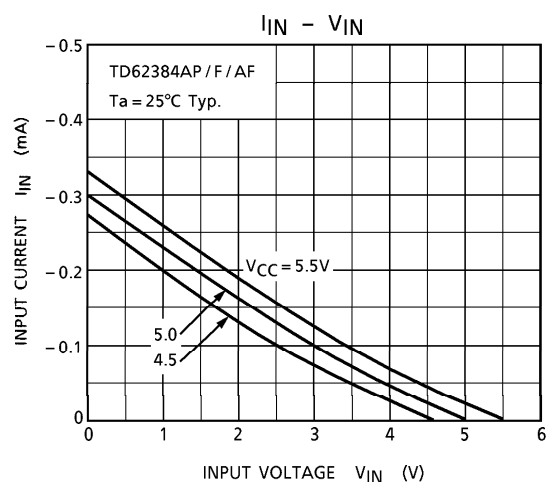
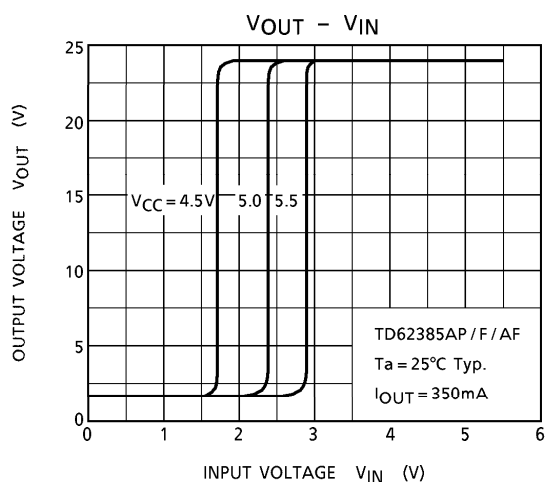
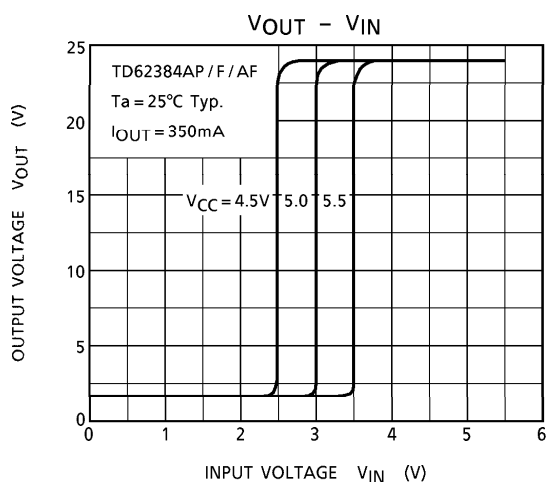
7. t_{ON}, t_{OFF}



- (Note 1) Pulse Width $50\mu s$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5ns$, $t_f \leq 10ns$
(Note 2) C_L includes probe and jig capacitance.

PRECAUTIONS for USING

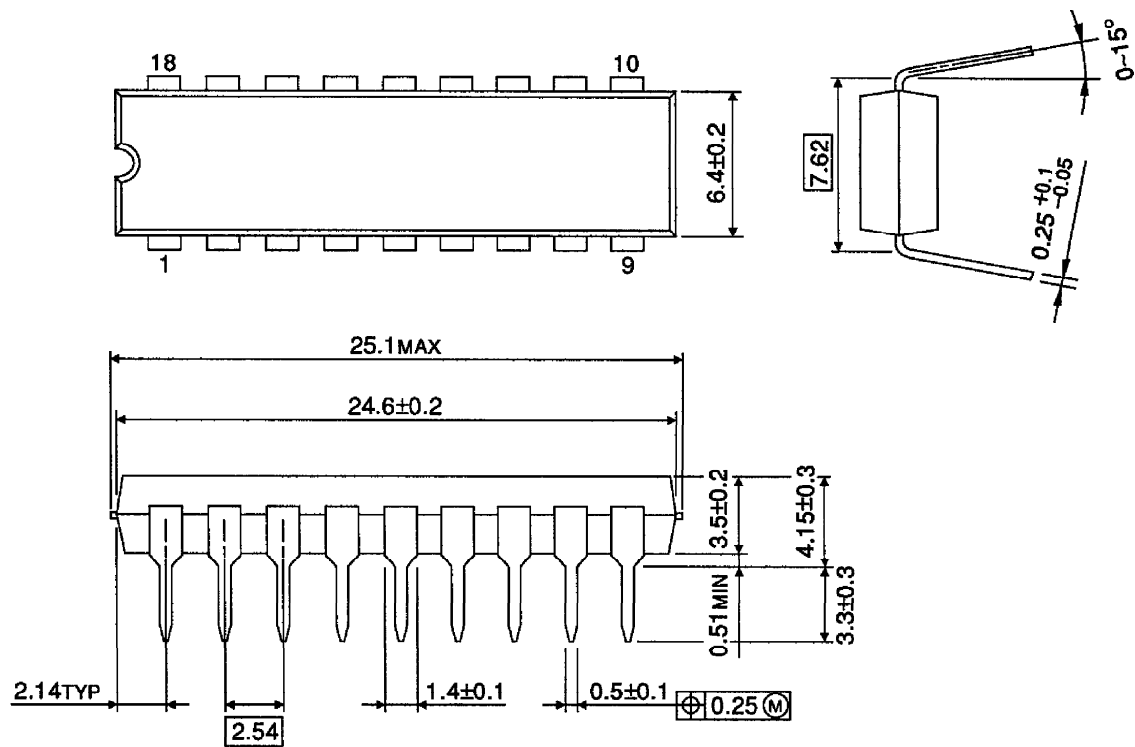
Utmost care is necessary in the design of the output line, V_{CC} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



OUTLINE DRAWING

DIP18-P-300-2.54D

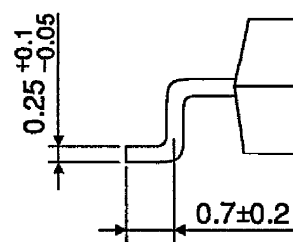
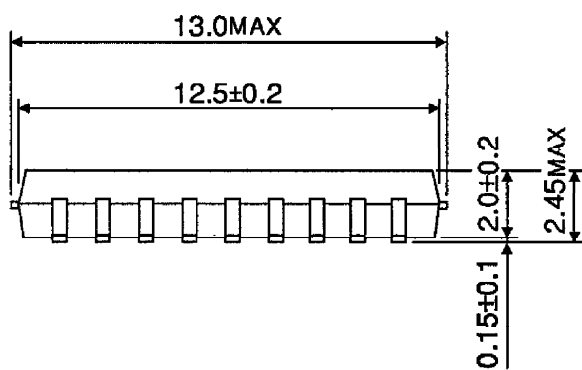
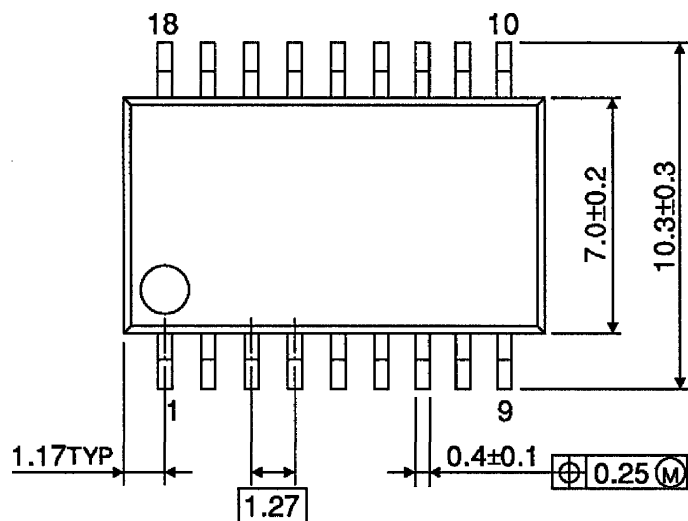
Unit : mm



Weight : 1.47g (Typ.)

OUTLINE DRAWING
SOP18-P-375-1.27

Unit : mm



Weight : 0.41g (Typ.)